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5. Page TTCS-BOX-HX-001 AMS-02 TASK SHEET (ATS) 4. ATS NO. **CONTINUATION PAGE** 6. MOD NO. VERIFICATION 21. OPERATIONS (Print, Type, or Write Legibly) 20. OPER SEQ. NO. 22. TECH 23. QA/DV **SCOPE** The purpose of the present document is to provide information and guidelines for the installation of the TTCS Heat Exchanger on its support and the installation into the TTCB. Figure 1 TTCS HEAT EXCHANGER INSTALLATION INTO THE TTCB

3 of 31 TTCS-BOX-HX-001 5. Page **AMS-02 TASK SHEET (ATS)** 4. ATS NO. **CONTINUATION PAGE** 6. MOD NO. 20. OPER SEQ. NO. 21. OPERATIONS (Print, Type, or Write Legibly) VERIFICATION 22. TECH 23. QA/DV Figure 2

AMS-02 TASK SHEET (ATS)

CONTINUATION PAGE

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20. OPER	21. OPERATIONS	VERIFIC	CATION
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APPLICABLE DOCUMENTS

The following documents in the latest applicable issue form a part of this plan to the extent specified herein:

AD	Document ID	Issue/Rev	Title
1	ET6029-04-031	· F/	ASSY HX FM P
2	ET6029-04-019	H/	HX FM P CLIP AND SUPPORT
3	ET5998-06-10	D/	TTCB FM Assembly base
4	ET5998-06-01	E/	ASSY TTCB P FM
		1	1 .

STANDARD AND SPECIAL TOOLS

For the hardware installation a standard tool shall be used.

Where the use of standard tooling is not possible, special tool may be employed. Each special tool has to be identified with its Drawing Number marked, in indelible way, on the same tool

All the tools have to be clean and free from dust and grease.

For the present installation only standard tools are needed

RUNNING TORQUE MEASUREMENT

In the present integration activity we have to consider only two types of locking as coupling. One by Insert Thread Locked In (MS21209 F1-20L .19-32 UNF 3A) and screw (MS2469C52 .19-32 UNF 3A).

And the second type by insert MS21209F1-15

The expected Locking (running) torque value, relative to MS2469C52 and NAS 3151-N3-10 screw is reported in the following table. This value is an output from Specification MIL-I-45914A

BOLT TYPE	BOLT SIZE	MIN LOCKING TORQUE [in*lbf]	MAX LOCKING TORQUE [in*lbf]
MS2469C52	.19-32 UNF 3A	1 (TBC) 2	6 (FBC) 18
NAS 1352-N3-10	.19-32 UNF 3A	1 (FBC) 2	6(TBC) (8

Since it is a continuous torque it is necessary to measure it with an analogical torque wrench, obtaining the maximum torque applied during this operation. The Locking Torque value has to be written in the relative box in the Integration Procedure Table and added to the Seating Torque required in the structural analysis, (and reported in the engineering drawings)

20. OPER SEQ. NO.

21. OPERATIONS (Print, Type, or Write Legibly)

FINAL INSTALLATION TORQUE MEASUREMENT

Final Torque to be applied to each screw is the result of the sum of the Locking Torque (measured) and the Seating Torque prescribed from the structural analysis (and reported also on the engineering drawing).

TORQUE (T)= SEATING TORQUE (ST) +LOCKING TORQUE (RT)

The Seating torques to be applied for each screws are listed in this ATS

The entire torque shall be applied using calibrated torque wrench

- SEATING TORQUE (from structural analysis)
- LOCKING (= RUNNING) TORQUE (measured)

LUBRICATION

All these fasteners shall be installed in <u>LUBRICATED</u> condition (according to the structural analysis)

The below Step by Step procedure, have to be followed for all the fittings to be used for the parts installation.

STEP	OFF-LINE MEASUREMENT STEPS		
1	Clean screws and washers in an Isopropyl Alcohol bath		
2	Let the screws and washers dry on a clean towel		
3	Perform a screws and washers visual Inspection	'	
4	Install the HX supports on the HX dummy support plate fasten by hand the screws of the intended tube side of the HX and torque with tool to 75% of the final torque value		
5	Fasten the screws of the support on the non-tube by hand loosely so 2 mm room is left between bolt and support		÷
6	Install the HX on top of the supports in the correct orientation	L-1075_111-111-111-111-111-111-111-111-111-11	
7	Install the clip on the HX tubes side on the HX support. Fasten the clip screws alternating by hand.	-	
8	Torque the 4 bolts to a value of 80% of the final torque		
. 9	Measure on both sides the room between clip and support with spacers (thickness gauging tools)		
10	Design & manufacture shims for the side with the largest spacer thickness based on the measured spacer thickness.		
11	With clip 1 still installed perform the steps 8-10 for the clip 2 (non-tube side). In this case the support could be slightly lifted from the dummy base plate due to the non-concentricity of the HX.		

AMS-02 TASK SHEET (ATS) CONTINUATION PAGE 21. OPERATIONS (Print, Type, or Write Legibly) 12 When still installed measure the gaps (dislocation) of the HX support (at the non-tube side) compared to the dummy base plate by spacers (thickness gauging tool).

20. OPER	21. OPERATIONS				
SEQ. NO.		(Print, Type, or Write Legibly)	22. TECH	23. QA/DV	
		When still installed measure the gaps (dislocation) of the HX support (at the non-tube side) compared to the dummy base plate by spacers (thickness gauging tool). Perform this for all 4 bolts individually. Design and manufacture washers with a thickness of the washers at the tube side plus the measured thickness.			
		by the spacers (4 or 2 sizes depending on the results) OFF-LINE INSTALLATION STEPS 1 Install the HX supports with correct washers (AS			
		DESIGNED ABOVE) on the HX dummy support plate fasten by hand the screws of both supports to 75% of the final torque value Install the HX on top of the supports in the correct			
		orientation Install the clip AND SHIMS on the HX tubes side on the HX support. Fasten the clip screws alternating by hand.			
		4 Measure the Locking Torque and register the value in the Integration Procedure Tables The Integration Procedure Tables are part of the present document Torque the 4 bolts to a value to the final torque			
		With clip 1 still installed perform the steps 6-7 for the second clip (non-tube side).			
		6 De-install the HX supports from the HX dummy base plate ON-LINE OPERATION			
		1 Clean screws and washers in an Isopropyl Alcohol bath 2 Let the screws and washers dry on a clean towel			
		Perform a screws and washers visual Inspection Install the HX-support assembly with the washers to the TTCB-P base plate	,		
	· ·	5 Measure the Locking Torque and register the value in the <u>Integration Procedure Tables</u> The <u>Integration Procedure Tables</u> are part of the present document			
		6 Torque the bolts to the final torque values			
				·	

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	AMS-02 TASK SHEET (ATS)	4. ATS NO.	TTCS-	BOX-HX	X-001
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SEQ. NO.	(Print, Type, or Write Legibly)			22. TECH	23. QA/DV
		,			
1.	Open this ATS		·	-	
2.	Perform the following preparatory work.				
2.1	Prepare the TTCS HX for installation. Perform a vibe installed (HX); clean the parts to be installed (HX) let the parts to be installed dry on the clean towel				-
2.2	Prepare screws and washer to be used for the part ir and washer visual inspection; clean screws and was bath and let screws and washers dry on a clean towe	hers in an Isoprop			
2.3	Perform a visual inspection of the TTCS Heat Exchall the inserts. If necessary clean them with Isoprop	•	cleanliness of		
2.4	Prepare the installation dummy plate for installati and clean the part with Isopropyl Alcohol and let the				
2.5	Weight all the hardware to be installed, including	fasteners. Recor	rd the weight		
	ITEM WEIGHT	Γ	d-1		
	#AS 1351 N3-10	•		c.c.ye	4
	MS24694 C52X8EA 18.33	}		***************************************	Jan
	-1-1X 12991	299			
	Bracket No tube side 197.75	g I g			
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	AIDC NO. 32010757				
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	Ex	⁽ P	•		
2.6	OFF-LINE MEASUREMENT STEPS				
2.6.1	HX Installation onto support.				
	WARNING: for HX FM1 installation reference d	lrawings are:			
					!

5. Page TTCS-BOX-HX-001 AMS-02 TASK SHEET (ATS) 4 ATS NO **CONTINUATION PAGE** 6. MOD NO. VERIFICATION 20. OPER SEQ. NO. 21. OPERATIONS (Print, Type, or Write Legibly) 22. TECH 23. QA/DV Assembly drawing:..... ET6029-04-DR-031-F Clip drawing: ET6029-04-DR-019.1-H Support: ET6029-04-DR-019.2-H Verify before use the availability of the approved drawing revision 2.6.2 Check the bill of material in the assembly drawing. 2.6.3 Put the installation dummy plate on a flat surface. 2.6.4 Install the two HX supports on the dummy HX installation base plate as shown in the figure. Install bolts washers as on the figure below 3D XML Player - [HX-FM1.3dxml] elect an object or a command Figure 4: Installation of HX supports to dummy base plate Apply a thin layer of the second and 2.6.5 prior the installation (as reported on the assembly drawings). DOM = 060208 601 EF Braycote Grease - PN25012 - AMSB Lot# /35999 Exp. Date 053023 052828 2.7 Torque only the bolts of the support on the side where the tubes of the HX will be located to 75% of the final seating value (for positioning). Final torque values are shown in below table

5. Page TTCS-BOX-HX-001 4. ATS NO. AMS-02 TASK SHEET (ATS) **CONTINUATION PAGE** 6. MOD NO. VERIFICATION 21. OPERATIONS (Print, Type, or Write Legibly) 20. OPER SEQ. NO. 22. TECH 23. QA/DV Torque (in*lbf) Dash Number Min Max Torque the fasteners installed in Step 2.7. Locking torque shall be 1-6 inch*lbf. (TBC) Final torque shall be 75% final seating torque = 31.65-26.93 inch*lbf above locking torque. 5% precision on torque. HX sup1.1 HX sup1.2 HX sup1.3 HX sup1.4 Only torque this support Select an object or a command Torque Wrench-Locking Torque PN <u>xQAA 0309</u> M# _____ Cal Due Date <u>06/22</u>/ Torque Wrench- Final Torque PN XQAA0309 M# _____ Cal Due Date 06/22/200 Final Torque (for positioning) Bolt Locking Torque c.c. tel JCH HX-sup1.1 36 HX-sup1.2 HX-sup1.3 HX-sup1.4 AMS Assembly Task Sheet (ATS) Continuation Rev 9/25/06

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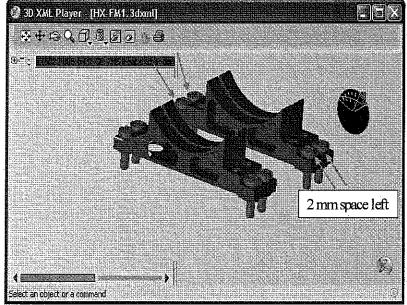
20. OPER SEQ. NO. 5. Page 10 of 31
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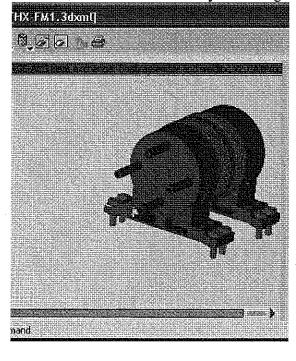
22. TECH 23. QA/DV

2.7.1 Leave the bolts on the other support **untorqued** and screw by hand until 2 mm is spacing is left in between bolt head and washer on the support.

21. OPERATIONS (Print, Type, or Write Legibly)



2.7.2 Install the HX on the two-supports
Orient the HX in the correct way according to AD 1.



20. OPER SEQ. NO. 21. OPERATIONS (Print, Type, or Write Legibly)

2.7.3 Install the clip 1 (on the tube side) on the support

Apply a thin layer of **Character Markets of the State**, to the threads of each bolt prior the installation (as reported on the assembly drawings

2.7.5 Fasten the screws alternating on both sides by hand and torque to 80% of the total torque.

Thereb Marson bear	Torque (in*lbf)				
Dash Number	Max	Min			
SACENTAL SAC	10.6	9			

Torque the fasteners installed in Step 2.7.3. Locking torque shall be 1-6 inch*lbf. (TBC) Final torque shall be 80% final seating torque = 8.48-6.75 inch*lbf above locking torque.

5% precision on torque.

12 5. Page TTCS-BOX-HX-001 AMS-02 TASK SHEET (ATS) 4. ATS NO. **CONTINUATION PAGE** 6. MOD NO. VERIFICATION 20, OPER SEQ. NO. 21. OPERATIONS (Print, Type, or Write Legibly) 22. TECH 23. QA/DV Torque Wrench-Locking Torque PN XQAA 0 30 9 M# Cal Due Date 06/ 22/2009 Torque Wrench-Final Torque M#_____ Cal Due Date 66/22/2009 PN XQAA 0 309 20 XML Player - [HX-FM1.3dxml] -X+4Q£3333 -5 TO ETGOZGIOG 6-991 GE-AMS Heat exclusive HX clip1.1 HX_clip1.3 HX_clip1.2 Bolt Locking Torque Final Torque (for positioning) HX-clip1.1 HX-clip1.2 12 20 HX-clip1.3 HX-clip1.4 Measure the shim thickness between clip and support on both sides of clip 1 with 2.7.6 spacers (thickness gauging tools). Spacer thickness is {(Thickness left + thickness right)-2*0.01"}/2. In case the spacer thickness < 0.01" use only 1 spacer In case spacer thickness < 0.005" use no spacers In case spacer thickness is < 0 machine off the clips so there is a gap of 0.005" AMS Assembly Task Sheet (ATS) Continuation Rev 9/25/06 JH

13 TTCS-BOX-HX-001 AMS-02 TASK SHEET (ATS) 4. ATS NO. **CONTINUATION PAGE** 6. MOD NO. VERIFICATION 21. OPERATIONS (Print, Type, or Write Legibly) 20. OPER SEQ. NO. 22. TECH 23. QA/DV Machine spacers according to drawing with thickness as measured in above 2.7.7 step. **A** AIDC HX SHIM 2.7.8 Install second clip 2 on the HX support 🔮 3D XML Player - [HX-FM1.3dxml] 表◆ ○①圆圆圆:● ET6029-005-b-PR-GE-AMS Heat exchanger finish assembly and welding V2-CATProduct , to the threads of each bolt 2.7.9 Apply a thin layer of prior the installation Fasten the screws alternating on both sides by hand and torque to 80% of the 2.7.10 total torque.

AMS-02 TASK SHEET (ATS)

CONTINUATION PAGE

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22. TECH 23. QA/DV

Dash Number

Torque (in*lbf)

Max Min

10.6 9

Torque the fasteners installed in Step 2.7.8. Locking torque shall be 1-6 inch*lbf. (TBC) Final torque shall be 80% final seating torque = 8.48-6.75 inch*lbf above locking torque.

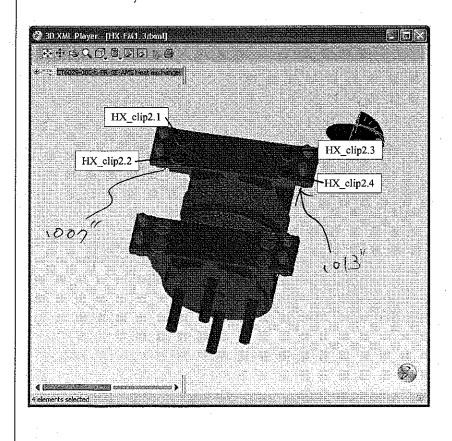
5% precision on torque.

Torque Wrench- Locking Torque

PN xQAA0309 M# Cal Due Date 06/22/2009

Torque Wrench-Final Torque

PN x Q AA 0 3 0 9 M# Cal Due Date 06/ > 2/ > 00 9



15 31 5. Page TTCS-BOX-HX-001 **AMS-02 TASK SHEET (ATS)** 4. ATS NO. **CONTINUATION PAGE** 6. MOD NO. 20. OPER SEQ. NO. 21. OPERATIONS (Print, Type, or Write Legibly) VERIFICATION 22. TECH 23. QA/DV Bolt Locking Torque Final Torque (for positioning) Jat HX-clip2.1 C. C. Yeh HX-clip2.2 HX-clip2.3 HX-clip2.4 2.7.11 Measure the shim thickness between clip and support on both sides of clip 1 with spacers (thickness gauging tools). Spacer thickness is {(Thickness left + thickness right)-2*0.01"}/2. In case the spacer thickness < 0.01" use only 1 spacer In case spacer thickness < 0.005" use no spacers In case spacer thickness is < 0 machine off the clips so there is a gap of 0.005" 2.7.12Machine spacers according to drawing with thickness as measured in above step. Car on the Criss A AIDC HX SHIM AMS Assembly Task Sheet (ATS) Continuation Rev 9/25/06 JH

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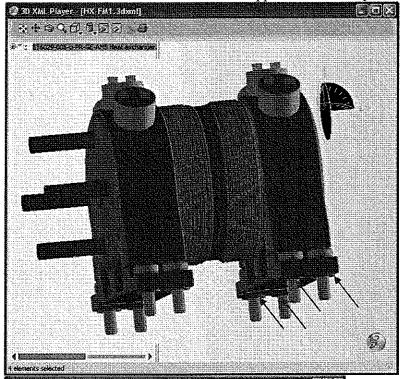
5. Page 16 of 31 TTCS-BOX-HX-001

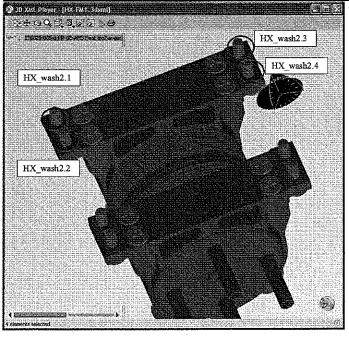
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21. OPERATIONS (Print, Type, or Write Legibly)

22. TECH 23. QA/DV

2.7.13 Perform washer measurements on the support to the base plate connection





AMS-02 TASK SHEET (ATS) CONTINUATION PAGE 2. OPEN CONTINUATION PAGE 2. OPEN CONTINUATION PAGE 3. OPEN CONTINUATION PAGE 3. OPEN CONTINUATION PAGE 3. OPEN CONTINUATION PAGE 3. OPEN CONTINUATION PAGE 4. ATS NO C. ADD NO VERFICATION 2. TECH 27. DECENT HX-wash2.1				5. Page 17	of 31
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HX-wash2.4		HX-wash2.1			- 41
HX-wash2.4		HX-wash2.2 <u>N/A</u> , "			C.C. den
Manufacture and washers according to the thicknesses measured in the former step. Starting point is ET5998-06-15.8.		HX-wash2.3 <u>V/A</u> , '/			JCH JCH
Step		HX-wash2.4 <u>N//J</u> , ,			
Step. Starting point is ET5998-06-15.8. Colored Col	2.7.14	Manufacture and washers according to the thickne	sses measured in	the former	
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15.8 6 THERMAL WASHER 100.561.3 TLOALAV 15.7 33 THERMAL WASHER 140.07.44 TLOALAV 15.8 31 THERMAL WASHER 102.05.64 TLOALAV 15.8 32 THERMAL WASHER 102.05.64 TLOALAV 15.9 32 THERMAL WASHER 102.05.65 TLOALAV 15.4 5 THERMAL WASHER 102.05.55 TLOALAV 15.3 4 THERMAL WASHER 102.05.55 TLOALAV 15.1 5 THERMAL WASHER 102.05.55 TLOALAV 15.1 6 THERMAL WASHER 102.05.55 TLOALAV 15.1 7 THERMAL WASHER 102.05.55 TLOALAV 15.1 7 THERMAL WASHER 102.05 TLOALAV 15.2 8 THERMAL WASHER 102.05 TLOALAV 15.1 9 THERMAL WASHER 102.05 TLOALAV 15.2 9 THERMAL WASHER 102.05 TLOALAV 15.3 9 THERMAL WASHER 102.05 TLOALAV 15.1 9 THERMAL WASHER 102.05 TLOALAV 15.2 9 TLOALAV 15.3 9 THERMAL WASHER 102.05 TLOALAV 15.1 9 THERMAL WASHER 102.05 TLOALAV 15.2 9 TLOALAV 15.3 9 THERMAL WASHER 102.05 TLOALAV 15.1 9 THERMAL WASHER 102.05 TLOALAV 15.2 9 TLOALAV 15.3 9 TLOALAV 15.3 9 TLOALAV 15.4 TLOALAV 15.5 9 TLOALAV 15.5 9 TLOALAV 15.5 9 TLOALAV 15.6 TLOALAV 15.7 TLOALAV 15.8 TLOALAV 15.8 TLOALAV 15.9 TLOALAV 15.1 TLOALAV 15.1 TLOALAV 15.2 TLOALAV 15.3 TLOALAV 15.4 TLOALAV 15.5 TLOALAV		ROUGHNESS: $3\sqrt{2}$ unless disapartse Indican	<u> </u>		
15.6 11 THERMAL NASHER 1448.7.723 TARALAY 15.5 92 THERMAL NASHER 16.9554 TARALAY 15.4 8 THERMAL NASHER 16.9554 TARALAY 15.3 9 THERMAL NASHER 160553 TARALAY 15.2 8 THERMAL NASHER 1605-83 TARALAY 15.2 8 THERMAL NASHER 1605-83 TARALAY 15.1 9 THERMAL NASHER 1605-430 TARALAY 15.1 10 THERMAL NASHER 1605-430 TARALAY 15.2 9 THERMAL NASHER 1605-430 TARALAY 15.2 9 THERMAL NASHER 1605-430 TARALAY 15.3 10 THERMAL NASHER 1605-430 TARALAY 15.4 9 THERMAL NASHER 1605-430 TARALAY 15.2 9 THERMAL NASHER 1605-430 TARALAY 15.3 10 TARALAY 15.4 9 TARALAY 15.5 10 TARALAY 15.6 10 TARALAY 15.7 10 TARALAY 15.8 10 TARALAY 15.8 TARALAY 15.9 TARALAY 15.1 10 TARALAY 15.1 10 TARALAY 15.2 TARALAY 15.2 TARALAY 15.3 TARALAY 15.4 TARALAY 15.5 TARALAY 15.4 TARALAY 15.5 TARALAY 15.6 TARALAY 15.1 TARALAY 15.2 TARALAY 15.3 TARALAY 15.4 TARALAY 15.5 TARALAY 15.4 TARALAY 15.2 TARALAY 15.4 TARALAY 15.5 TARALAY 15.4 TARALAY 15.4 TARALAY 15.5 TARALAY 15.5 TARALAY 15.6 TARALAY 15.6 TARALAY 15.1 TARALAY 15.2 TARALAY 15.3 TARALAY 15.4 TARALAY 15.4 TARALAY 15.5 TARALAY 15.1 TARALAY 15.1 TARALAY 15.2 TARALAY 15.2 TARALAY 15.3 TARALAY 15.4 TARALAY 15.4 TARALAY 15.1 TARALAY 15.2 TARALAY 15.2 TARALAY 15.3 TARALAY 15.4 TARALAY 15.4 TARALAY 15.5 TARALAY 15.1 TARALAY 15.1 TARALAY 15.2 TARALAY 15.2 TARALAY 15.3 TARALAY 15.4 TARALAY 15.5 TARALAY 15.6 TARALAY 15.1 TARALAY 15.2 TARALAY 15.3 TARALAY 15.4 TARALAY 15.5 TARALAY 15.6 TARALAY 15.6 TARALAY 15.7 TARALAY 15.8 TARALAY 15.8 TARALAY 15.8 TARALAY					
13.5 32 THERMAL WASHER 10.0555 TASAAW 16.4 8 THERMAL WASHER 10.0555 TASAAW 15.3 6 THERMAL WASHER 10.0555 TASAAW 15.2 8 THERMAL WASHER 10.0555 TASAAW 15.1 9 THERMAL WASHER 10.04.425 TASAAW 15.1 9 TASAAW 15		15.7 53 THERMAL WASHER 14x8.7x4 T16A14V			
15.3 8 TREBBAL WASHER 10x4583 T36A14V 15.1 8 TREBBAL WASHER 10x4.4x5 T36A14V 15.1 10 TREBBAL WASHER 10x4.4x5 T36A14V 15.1 10 TREBBAL WASHER 10x4.4x5 T36A14V 15.1 10 TREBBAL WASHER 10x4.4x5 T36A14V 15.2 1 TREBBAL WASHER 10x4.4x5 T36A14V 15.3 10 TREBBAL WASHER 10x4.4x5 T36A14V 15.4 10 TREBBAL WASHER 10x4.4x5 T36A14V 15.5 1 TREBBAL WASHER 10x4.4x5 T36A14V 15.6 1 TREBBAL WASHER 10x4.4x5 T36A14V 15.7 1 PAPER 10x4.4x5 T36A14V 15.8 1 T36A14V 15.9 1 T36A14V 15.1 10 T36A14V 15.2 1 T36A14V 15.3 1 T36A14V 15.4 1 T36A14V 15.5 1 T36A14V 15.5 1 T36A14V 15.6 1 T36					'
15.2 B THERMAL WASHER 10X4.4XS TEAL 4V 15.1 B THERMAL WASHER 10X4.4XS TEAL 4V 15.1 B THERMAL WASHER 10X4.4XS TEAL 4V 15.2 D THERMAL WASHER 10X4.4XS TEAL 4V 15.1 B THERMAL WASHER 10X4.4XS TEAL 4V 15.1 B THERMAL WASHER 10X4.4XS TEAL 4X	ļ				
PART PART MATERIAL REMARKS SCALE: 2:1 GRECKED: K. MO. NETERING DATE: 2008-01-15 APPROVED: J. V. ES DESTORED: DESTORED: AMS TTCS SCRUECT: TTCBP FM: THERMAL WASHERS NATIONAL AEROSPACE ET5998-06 15 LABORATORY Unbolt the Clip 1 and Clip 2 2.7.16 END OF OFF-LINE MEASUREMENT STEPS	. [
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2.7.15 Unbolt the Clip 1 and Clip 2 2.7.16 END OF OFF-LINE MEASUREMENT STEPS		77) ·		
2.7.15 Unbolt the Clip 1 and Clip 2 2.7.16 END OF OFF-LINE MEASUREMENT STEPS					
2.7.15 Unbolt the Clip 1 and Clip 2 2.7.16 END OF OFF-LINE MEASUREMENT STEPS	Ì	PARJEST - CRAFTER NO. 1 ARE. HS). ;			
2.7.16 END OF OFF-LINE MEASUREMENT STEPS		LABORATORY	—		
2.7.16 END OF OFF-LINE MEASUREMENT STEPS	2.7.15	Unbolt the Clip 1 and Clip 2			
	:				
AMS Assembly Task Sheet (ATS) Continuation Rev 9/25/06 JH	2.7.16	END OF OFF-LINE MEASUREMENT STEPS	•		
AMS Assembly Task Sheet (ATS) Continuation Rev 9/25/06 JH					
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			5. Page 18	of .	31
	AMS-02 TASK SHEET (ATS)	4. ATS NO.	TTCS-	BOX-HX	-001
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20. OPER SEQ. NO.	(Print, Type, or Write Legibly)			22. TECH	23. QA/DV
2.7.17	OFF-LINE INSTALLATION STEPS				
2.7.18	Put the installation dummy plate on a flat surface.				·
2.7.19	Install the two HX supports on the dummy HX in as shown in the figure. Install all 8 bolts washers as on the figure below 30 XML Player [HX-FM1.3dxml] P + Q D 20 20 20	stallation base p	late		
	Select an object or a command				
	(Washer) NAS				
	Thermal Washer-15.8 10x5x1.3 (adapted per HX to Figure 4: Installation of HX supports to dummy b Install on clip 2 the washers as mea	ase plate isured in ste	ep 2.7.13.		
2.7.20	Apply a thin layer of prior the installation (as reported on the assembly	, to the threads drawings).	of each bolt		
	Braycote Grease - PN Lot# l	Exp. Date			

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	AMS-02 TASK SHEET	•		4. ATS NO.	TTCS-I	ЗОХ-НХ	-001
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20. OPER SEQ. NO.		21. OPERATION (Print, Type, or Write				VERIFIC 22. TECH	23. QA/DV
2.8	Torque only the bolts of the s HX will be located to 75% of Final torque values are show	f the final seatin	g value	port 1) where th (for positioning	e tubes of the		
		Torque	(in*lbf				
	Dash Number	Max	M	in			
	Torque the fasteners installed (TBC) Final torque shall be above locking torque. 5% precision on torque.	l in Step 2.7. L 75% final seatin	ocking t	orque shall be 1 e = 31.65-26.93	-6 inch*lbf. inch*lbf		
	270 precision on serque						
	HX_sup1.1 HX_sup1.2 Select an object or a command	HX_sup1.4	Only ton	HX_sup1			
	Torque Wrench- Locking To	rque					
	PN M	#	Cal	Due Date			
	Torque Wrench- Final Torque						
,	PN M	#	Cal	Due Date			
AMS Assembl	y Task Sheet (ATS) Continuation Rev 9/25/06 JH					·	1

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AMS-02 TASK SHEET (ATS) 4. ATS NO	J	CS-BOX-HX-00	1	
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20. OPER 21. OPERATIONS		VERIFICATION	1	
SEQ. NO. (Print, Type, or Write Legibly)	- ideaching	22. TECH 23. (QA/DV	
Bolt Locking Torque Final Torque (for p	ositioning)			
HX-sup1.1	-			
HX-sup1.2				
HX-sup1.3				
HX-sup1.4				
2.8.1 Leave the bolts on support 2 untorqued and screw by hand spacing is left in between bolt head and washer on the support	d until 2 mm is			
30 XML Player - [HX-FM1.3dxml]		us projection.		
	J, Cal			
		*		
		1		
2 mm space le	ft.	**************************************		
Select an object or a command				
2.8.2 Install the HX on the two-supports	,			
Orient the HX in the correct way according to AD 1.				
FX-FAI, 36mil) もずらに、当				
Market Hard and the lower White December 19 Control of the Control		44.4		
		AA, s.		
		t.		

5. Page TTCS-BOX-HX-001 AMS-02 TASK SHEET (ATS) 4. ATS NO. CONTINUATION PAGE 6. MOD NO. VERIFICATION 21. OPERATIONS (Print, Type, or Write Legibly) 20. OPER SEQ. NO. 22. TECH 23. QA/DV 3D XML Player - [HX-FM1.3dxml] **₹**†¤<0,0,¶,ØØ ⊪**#** ⊞-TÇ, ET6029-005-b-PR-GE-AMS Heat exchanger finish assembly and welding V2.CATP ET6029-005-b-PR-GE-AMS Heat exchanger finish assembly and welding V2:CATProduct HX Clip shim as per HX torque procedure (Screw) MS24694C52 Apply a thin layer of **Servent of the assembly**, to the threads of each bolt prior the installation (as reported on the assembly drawings 2.8.3 Fasten the screws alternating on both sides by hand and torque to the final 2.8.4 torque value. AMS Assembly Task Sheet (ATS) Continuation Rev 9/25/06 JH

5. Page TTCS-BOX-HX-001 AMS-02 TASK SHEET (ATS) 4. ATS NO. **CONTINUATION PAGE** 6. MOD NO. VERIFICATION 20. OPER SEQ. NO. 21. OPERATIONS (Print, Type, or Write Legibly) 22. TECH 23. QA/DV Torque (in*lbf) Dash Number Min Max 9 10.6 Torque the fasteners installed in Step 2.7.3. Locking torque shall be 1-6 inch*lbf. (TBC) Final torque shall be final seating torque = 10.6-9 inch*lbf above locking torque. 5% precision on torque. 2.8.5 Torque Wrench- Locking Torque M# Cal Due Date ob/22/2009PN XQAA0309 Torque Wrench-Final Torque M# _____ Cal Due Date 06/22/209 PN XQAA 0309 🝘 3D XML Player - [HX-FM1.3donf] **•Q6699 8 HX clip1.1 HX_clip1.3 HX_clip1.2 HX clip1.4

31 5. Page TTCS-BOX-HX-001 4. ATS NO. AMS-02 TASK SHEET (ATS) **CONTINUATION PAGE** 6. MOD NO. VERIFICATION 21. OPERATIONS (Print, Type, or Write Legibly) 20. OPER SEQ. NO. 22. TECH 23. QA/DV Final Torque (for positioning) Locking Torque Bolt HX-clip1.1 c.c. Jeh JCH HX-clip1.2 HX-clip1.3 <u>| b</u> HX-clip1.4 Install second clip 2 on the HX support 2.8.6 🐉 3D XML Player - [HX-FM1.3dxml]. (i): Tracks, not be the GE AMS Heat exchanger finish assembly and welding v2. CATP ET6029-005-b-PR-GE-AMS Heat exchanger finish assembly and welding V2. CATProduct HX Clip shim as per HX torque procedure (Screw) MS24694C52

31 5. Page TTCS-BOX-HX-001 AMS-02 TASK SHEET (ATS) 4. ATS NO. **CONTINUATION PAGE** 6. MOD NO. VERIFICATION 20. OPER SEQ. NO. 21. OPERATIONS (Print, Type, or Write Legibly) 22. TECH 23. QA/DV Apply a thin layer of to the threads of each bolt 2.8.7 prior the installation 2.8.8 Fasten the screws alternating on both sides by hand and torque to the final torque value. Torque (in*lbf) Dash Number Max Min 9 10.6 Torque the fasteners installed in Step 2.7.8. Locking torque shall be 1-6 inch*lbf. (TBC) Final torque shall be the final seating torque = 10.6-9 inch*lbf above locking torque. 5% precision on torque. Torque Wrench-Locking Torque PN XQAAo3o9 M# Cal Due Date ob/ \(\sum \sum \sum \sum \text{Oof}\) Torque Wrench- Final Torque PN XQAAo3o9 M# Cal Due Date ob/ \(\sum \sum \sum \sum \text{Oof}\) 医中央尺位 原图图 5-8 HX_clip2,1 HX_clip2.2

TTCS-BOX-HX-001 AMS-02 TASK SHEET (ATS) 4. ATS NO. **CONTINUATION PAGE** 6. MOD NO. VERIFICATION 21. OPERATIONS (Print, Type, or Write Legibly) 20. OPER SEQ. NO. 22. TECH 23. QA/DV Locking Torque Final Torque Bolt (0 HX-clip2.1 c.c. yell 12 HX-clip2.2 HX-clip2.3 HX-clip2.4 Torque the bolts of support 2 to 75% of the final seating value (for positioning). 2.9 Final torque values are shown in below table Torque (in*lbf) Dash Number Min Max Torque the fasteners installed in Step 2.7. Locking torque shall be 1-6 inch*lbf. (TBC) Final torque shall be 75% final seating torque = 31.65-26.93 inch*lbf above locking torque. 5% precision on torque. HX sup2.1 HX_sup2.2 HX_sup2.4 HX_sup2.3 AMS Assembly Task Sheet (ATS) Continuation Rev 9/25/06 JH

26 TTCS-BOX-HX-001 **AMS-02 TASK SHEET (ATS)** 4. ATS NO. **CONTINUATION PAGE** 6. MOD NO. VERIFICATION 21. OPERATIONS (Print, Type, or Write Legibly) 20. OPER SEQ. NO. 22. TECH 23. QA/DV Torque Wrench-Locking Torque PN ____ M# _____ Cal Due Date___ Torque Wrench- Final Torque M# ____ Cal Due Date_ Final Torque (for positioning) Bolt Locking Torque HX-sup2.1 HX-sup2.2 HX-sup2.3 HX-sup2.4 END OF OFF-LINE INSTALLATION STEPS 2.9.1

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	AMS-02 TASK SHEET (ATS)	4, ATS NO.	TTCS-	BOX-HX	ζ-001
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32 Q . NO.	(This, Type, O. Prine Legily)			22. TECH	23. QA/DV
2.9.2	ON-LINE STEPS				
2.10	De-install the TTCS HX from the dummy HX inst	allation plate.			
2.11	Prepare the TTCS HX for installation. Perform a value installed (HX); clean the parts to be installed (Fig. 1) let the parts to be installed dry on the clean towel				The state of the s
2.12	Prepare screws and washer to be used for the part and washer visual inspection; clean screws and was bath and let screws and washers dry on a clean tow	shers in an Isoprop			
2.13	Perform a visual inspection of the TTCS Heat Excall the inserts. If necessary clean them with Isopro		cleanliness of		1
2.14	Prepare the installation dummy plate for installa and clean the part with Isopropyl Alcohol and let t		_		
2.15	Weight all the hardware to be installed, includir	g fasteners. Recor	d the weight		
			·		
	ITEM WEIGH	ſT			
			7		4
	T 3. 0. 2	18= X1.44 (V	JCH	C . \ \ \ \
	Thomal Washer 13.8 x 8 0.33 x	8 - 86 4 1,35 g	9		
	HX (After tube cutting) Added 3M2216 1712	, 35 g			
	SCALE	Cal Date of 14	>>09		
2.16	INSTALLATION OF HX ONTO THE TTC				Company of the Compan
	WARNING: for HX FM1 installation reference	drawings are:			**************************************
	Assembly drawing: ET6029-04-DR-0Clip drawing: ET6029-04-DR-0Support: ET6029-04-DR-0)19.1-H			

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	AMS-02 TASK SHEET (ATS)	4. ATS NO.		-ВОХ-НХ	
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	Verify before use the availability of the approved	drawing revision		22. 12011	23. QAVDV
2.16.1	Check the bill of material in the assembly drawing	g.			
2.16.2	Install the two HX supports on the TTCB base plabelow.	ate as shown in the	e figure	-	
Total Control of the					
	Thermal Washer-15.8 10x5x1.3 (adapted per HX to Figure 4: Installation of HX supports to dummy be Apply a thin layer of prior the installation (as reported on the assembly prior the installation (as reported on the assembly be because of the support of the installation (as reported on the assembly be because of the support of the installation (as reported on the assembly because of the support of the installation (as reported on the assembly because of the support of the installation (as reported on the assembly because of the support of	orque procedure ase plate to the threads o	f each bolt		

31 5. Page TTCS-BOX-HX-001 **AMS-02 TASK SHEET (ATS)** 4. ATS NO. **CONTINUATION PAGE** 6. MOD NO. 20. OPER SEQ. NO. VERIFICATION 21. OPERATIONS (Print, Type, or Write Legibly) 22. TECH 23. QA/DV Install the fasteners as per figure 4 and record fasteners lot number 2.17 LOT# n.4 BOLTS NAS1351N03-10 393911 LOT# n.4 WASHERS NAS62010LC LOT# N/A n.4 WASHERS ET5998-06-15.8 2.18 Torque the bolts of the support on the side where the tubes of the HX will be located to the final seating value. Final torque values are shown in below table Torque (in*lbf) Dash Number Max Min Torque the fasteners installed in Step 2.7. Locking torque shall be 1-6 inch*lbf. (TBC) Final torque shall be 42.2-35.9 inch*lbf above locking torque. 5% precision on torque. HX sup1.1 HX_sup1.2 HX sup1.3

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	AMS-02 TASK SHEE	• •		4. ATS NO.	TTCS	-ВОХ-НХ	K-001
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20, OPER SEQ. NO.					VERIFICATION		
	Torque Wrench- Locking To PN XQAA 0357 M Torque Wrench- Final Torque PN XQAA 0357 M Bolt Locking To M HX-sup1.1 /3 HX-sup1.2 /4 HX-sup1.3 /4 HX-sup1.4	orque # ue #	Cal	Due Date 02/05/7	>0 (>009. >0/2009	JCH	23. QA/DV
2.19	Install the fasteners support 2 n.4 BOLTS NAS1351 n.4 WASHERS NAS6201	2 as per figure 4 N03-10 LO	T#	ord fasteners lot	number		
7,786	n.4 WASHERS ET5998-0 with thicknesses as dete	06-15.8 LC	T#Ν				4 to 10 to 20 to 2
2.19.1	Apply a thin layer of prior the installation (as respondent to the installation of the supp torque values are shown in between the supplemental torque values are shown in the supplemental torque values	ported on the as Lot# [35° . GMSB ort 2 of the HX	sembly of the second se	drawings). Date 0 0 0 2	. 08		
	Dash Number	Torque Max	(in*lbf)				
AMS Assembly	Task Sheet (ATS) Continuation Rev 9/25/06 JH					لـــــــــــــــــــــــــــــــــــــ	

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÷	Torque the fasteners installed in Step 2.7. Locking to (TBC) Final torque shall be 42.2-35.9 inch*lbf above 5% precision on torque.	orque shall be 1- ve locking torqu	-6 inch*lbf. e.		
	HX_sup2.1 HX_sup2.1				
	HX_sup2.4 HX_sup2.3	•		PO deleverance	
	Torque Wrench- Locking Torque PN グロロー M# Cal	Due Date 02/2	0/2009 0/2009		
	Torque Wrench- Final Torque	-,-	, ,		
	PN XBAA OSLY M# Cal	Due Date or ho	1700 9		
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2.20.1	End of online operations				
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